REMARKS

Claims 1-23 were pending in this application when the present Office Action was mailed (November 10, 2005). In this Response, claims 1-15 have been canceled, and claims 16, 18, 20, and 22 have been amended. Accordingly, claims 16-23 are currently pending.

In the November 10, 2005 Office Action, all the pending claims were rejected. More specifically, the status of the application in light of this Office Action is as follows:

(A) The drawings are subject to an objection under 37 C.F.R. § 1.83;

(B) Claims 1-23 stand rejected under 35 U.S.C. § 112, first paragraph;

(C) Claims 1, 2, 6, and 7 stand rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 6,402,806 to Schmitt et al. ("Schmitt"); and

(D) Claims 3-5 and 8-23 stand rejected under 35 U.S.C. § 103(a) over the combination of Schmitt and U.S. Patent No. 6,277,763 to Kugimiya et al. ("Kugimiya").

The undersigned attorney wishes to thank the Examiner for engaging in a telephone interview on January 18, 2006. During the telephone interview, the Examiner and the applicants' representative discussed the claimed subject matter and the cited references – Schmitt and Kugimiya. The following remarks reflect and expand upon the discussion during the January 18 telephone interview. As such, the applicants request that this paper also constitutes the applicants' Interview Summary.

A. Response to the Objection to Drawings

The drawings were objected to under 37 C.F.R. § 1.83(a) for allegedly failing to show every feature of the invention specified in the claims. Without conceding to the merits of this rejection, claims 1-15 have been canceled, and independent claims 16 and 20 have been amended as suggested by the Examiner. Applicants respectfully submit that the various features of the pending claims are shown in the Figures. For

example, the "mainline" of claim 16 is shown as item 170 in Figures 4, and an example of a "mainline" is described at paragraph [0024]. Accordingly, the objection to drawings should be withdrawn.

B. Response to the § 112 Rejection

Claims 1-23 were rejected under 35 U.S.C. § 112, first paragraph, for allegedly failing to comply with the enablement requirement. Although the applicants respectfully submit that a person having ordinary skill in the art could make and use the claimed invention without any undue experimentation based on the specification and Figures 4-6, independent claims 16 and 20 have been amended as suggested by the Examiner. Accordingly, the Section 112, first paragraph, rejections of claims 1-15 are now moot, and the Section 112, first paragraph, rejections of claims 16-23 should be withdrawn.

C. Response to the § 102(b) Rejection

Claims 1, 2, 6, and 7 were rejected under 35 U.S.C. § 102(b) as being anticipated by Schmitt. Claims 1, 2, 6, and 7 have been canceled. Accordingly, the Section 102(b) rejections of claims 1, 2, 6, and 7 are now moot.

D. Response to the § 103(a) Rejection

Claims 3-5 and 8-23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Schmitt in view of Kugimiya. Claims 3-5 and 8-15 have been canceled. Accordingly, the Section 103(a) rejections of 3-5 and 8-15 are now moot. The following remarks address the rejections of claims 16-23. For the reasons discussed below, the Section 103(a) rejections of claims 16-23 should be withdrawn because the combination of Schmitt and Kugimiya does not teach or suggest the claimed combination of features.

Claim 16 is directed to a system including a reaction chamber, a mainline coupled to the reaction chamber, and a vacuum pump coupled to the mainline. The mainline has a first branchline and a second branchline, and each branchline is downstream from the reaction chamber. A first trap and a second trap are respectively

placed in the first and second branchlines to collect byproducts from the reaction chamber. The system also includes a throttling valve placed in the second branchline and a pressure monitor placed to determine the pressure difference across the first trap. A controller is operably coupled to the pressure monitor and the throttling valve. The controller includes a computer-readable medium containing instructions that cause the controller to perform a method that includes: (1) exhausting byproducts from the reaction chamber through the first trap; (2) determining the pressure difference across the first trap caused by a flow of the byproducts by monitoring the pressure monitor; (3) dynamically controlling the flow of byproducts into the second trap by regulating the throttling valve; and (4) maintaining the pressure differential across the first trap in the mainline within a desired range based on the monitored pressure difference.

Several embodiments of systems in accordance with claim 16 are useful in deposition processes that deposit thin films onto microfeature workpieces because they can maintain a consistent pressure in the reaction chamber even as the traps fill with the byproducts. As is known in the art, uncontrolled fluctuations in pressure can cause undesired results in the deposited film. The systems operating in accordance with claim 16 can maintain the pressure difference across the first trap within a desired range by regulating the throttling valve to admit byproducts into the second trap in a manner that maintains a constant desired pressure in the reaction chamber. System in accordance with claim 16 can accordingly produce high quality films and have long run times.

Schmitt discloses a method for recovering un-reacted precursor components in a CVD process (Abstract). A hot trap is placed downstream of the reaction chamber followed by a primary cold trap (Figure 5). A bypass cold trap is arranged in parallel with the primary cold trap to allow continued CVD operation while removing and replacing the primary cold trap (column 6, lines 22-24). During operation, the primary inlet valve and the primary outlet valve of the primary cold trap are open while the bypass inlet valve and the bypass outlet valve are closed (column 6, lines 36-40). As

the primary cold trap fills up with byproducts, the pressure differential across the cold trap rises (column 6, lines 45-47). After the pressure differential exceeds a selected limit, the primary cold trap needs to be replaced (column 6, lines 47-50). During switching, the CVD process is stopped, and the primary inlet valve is first closed to allow purging the primary cold trap (column 6, lines 58-60). After purging, the primary outlet valve is closed, and the bypass inlet and outlet valves are opened to allow the CVD process to resume (column 7, lines 1-4). As a result, the bypass cold trap is designed to operate as backup for the primary cold trap and not to operate jointly with the primary cold trap during normal operation.

Kugimiya discloses an etching process chamber having antenna segments coupled to radio frequency ("RF") sources and various reactant gas lines (column 2, lines 65-67). In operation, the reactant gas mixture is ignited into plasma in the process chamber by applying RF power from the RF sources (column 3, lines 19-22). The pressure in the process chamber is controlled using a throttle valve at the exhaust end of the chamber before a vacuum pump (column 3, lines 22-24). The chamber pressure is regulated to between about 0.5 to about 100 mTorr by regulating the throttle valve (column 4, lines 30-33).

Claim 16 is patentable over the combination of Schmitt and Kugimiya because there is no suggestion or motivation to modify Schmitt to have a throttling valve as taught by Kugimiya. Schmitt discloses a bypass trap to allow operation of the CVD process while the primary cold trap is serviced. Schmitt does not suggest that a throttling valve would provide any benefit in Schmitt's system. Contrarily, Schmitt teaches away from such an arrangement because, as described above, the two cold traps in Schmitt are designed to operate as backup for each other and not to operate jointly during normal operation. Even if Schmitt's bypass trap was used with a throttling valve to maintain a desired pressure drop across the primary cold trap as claimed, the pressure differential across the primary cold trap would not exceed the selected limit until both the primary and the bypass traps contain sufficient byproducts that they both

would need to be replaced. As a result, the CVD system of Schmitt would need to be shut down during the replacement of both the primary and the bypass traps, which is in direct opposition to the designed purpose of Schmitt's bypass trap. Accordingly, one skilled in the art would not be motivated to combine the teachings of Schmitt and Kugimiya to come up with the claimed combination of features.

Moreover, even if Schmitt and Kugimiya were combined, the combined teachings of Schmitt and Kugimiya fail to teach each and every feature of claim 16. For example, neither reference teaches or suggests a controller that includes a computer-readable medium containing instructions that cause the controller to perform a method that includes "dynamically controlling the flow of byproducts into the second trap by regulating the throttling valve." As discussed above, Schmitt teaches operating only one trap at a time. Thus, for the sake of argument, if Schmitt were to be combined with Kugimiya by having a throttle valve in the branchline having the bypass cold trap, the exhaust would still not be admitted into the bypass cold trap because "[d]uring operation, . . . the bypass inlet valve and the bypass outlet valve are closed." Furthermore, neither references teaches or suggests a controller that includes a computer-readable medium containing instructions that cause the controller to perform a method that includes "maintaining the pressure differential across the first trap in the mainline within a desired range based on the monitored pressure difference." Instead, Kugimiya teaches monitoring and maintaining the pressure (instead of a pressure difference) in the process chamber based on the monitored process chamber pressure, and Schmitt does not mention maintaining a pressure difference anywhere. Accordingly, for at least the reasons discussed above, the combination of Schmitt and Kugimiya fails to teach all the limitations of amended claim 16.

As a result, the cited references do not support a *prima facie* case of obviousness as applied to claim 16. Amended claim 16 is accordingly patentable over the combined teachings of Schmitt and Kugimiya. Claims 17-19 are patentable over this combination of references as depending from allowable claim 16 and because

these claims contain additional features. Claim 20 contains subject matter similar to amended claim 16. Accordingly, claim 20 is patentable over Schmitt in view of Kugimiya because of the reasons discussed above with reference to claim 16. Claims 21-23 are patentable over Schmitt in view of Kugimiya because these claims depend from claim 20 and also because these claims include additional features. Accordingly, the Section 103(a) rejections of claims 16-23 should be withdrawn.

E. Conclusion

In view of the foregoing, the pending claims patentably define over the applied art. The applicant respectfully requests reconsideration of the application and a mailing of a Notice of Allowance. If the Examiner has any questions or believes a telephone conference would expedite prosecution of this application, the Examiner is encouraged to call the undersigned representative at (206) 359-6038.

Respectfully submitted,
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